sion of calcium and magnesium carbonates into silicates in soils has been due entirely to replacement of sodium and potassium and other bases in polysilicates. The writer and associates will shortly present in bulletin form conclusive evidence that magnesium carbonate reacts with and is fixed by silica (SiO_2), and that calcium to a less degree acts in the same manner.

Titanium oxide, which chemically is closely allied to silica and which is usually present in soils, was found to bring about the same decomposition as silica. The evidence secured points strongly to the nonexistence of magnesium in the form of carbonate in soils of humid climates.

It is believed that this research will throw considerable light upon the use of dolomite in farm practise.

W. H. McIntire
Agricultural Experiment Station,
University of Tennessee, Knoxville,
February 16, 1914

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

SECTION C—CHEMISTRY

On the forenoon of Wednesday, December 31, joint sessions of Sections B and C were held in the Georgia School of Technology, with Vice-president Cole, of Section B, in the chair. The purpose of the meeting was a discussion of geochemical and geophysical topics; it is referred to further in the report of Section B.

The main sessions of Section C were held at the Winecoff Hotel on Thursday, January 1, with Dr. C. L. Alsberg, vice-president of the section, in the chair. This was a joint meeting with the Georgia Section of the American Chemical Society, the secretary of which had assisted in arranging the program. There was an attendance of between fifty and sixty, and considerable interest was evinced in all of the papers presented. In the evening a smoker—which indeed partook rather of the nature of a dinner—was tendered to the visiting chemists by the Georgia Section of the American Chemical Society; a number of topical verses and songs were sung and the whole affair was most enjoyable. The secretary desires to record here on behalf of the visiting chemists their appreciation of the hospitality of the Georgia Section and to express thanks to it and to its secretary, Mr. J. S. Brogdon, for contributing so much towards the success of the meeting.

A brief account of the proceedings is appended.

The following resolution, presented by Professor Charles E. Munroe, was carried unanimously:

Whereas the Committee of this Section on Nomenclature and Notation presented at the Indianapolis meeting a report through its chairman, Dr. J. Lewis Howe, affirming the validity of the name and symbol columbium, Cb; and,

Whereas this report was accepted and adopted by this section; and,

Whereas the Committee on Inorganic Nomenclature of the International Association of Chemical Societies has reported on September 22, 1913, favoring the name and symbol niobium, Nb, for the element which was named columbium by its discoverer; and,

Whereas a later detailed investigation of the historical record by Dr. F. W. Clarke, a copy of the results of which is filed herewith,[1] finds no valid reason for the use of the name niobium;

Therefore be it resolved that we reaffirm our endorsement of the report of the committee of this section and view with regret this action of the committee of the International Association of Chemical Societies in advocating the use of the later name, thus introducing confusion where simplicity is sought.

Following this a vote of thanks, proposed by Professor Brackett and carried unanimously was accorded to the authorities of the University of Virginia, and in particular to Professor F. P. Dunnington, for their courtesy in allowing samples from their collection of the explosive materials used by the Confederacy during the War to be forwarded to Atlanta for use as illustrative material for Professor Munroe's lecture.

The Cause of Osmotic Pressure: W. V. Metcalf.

After summarizing the different theories which have been advanced, the author presented a statement and defense of Le Blanc's theory, which, though the best explanation yet offered, has up to this time not attracted as much general attention as it deserves. On this theory osmosis is considered to result from the different internal pressures of solution and solvent, the internal pressure being the resultant of the normal components of the unbalanced molecular attractions at the free surface of the liquid.

Some Possibilities of Georgia Clays: Charles L. Parsons.

In the state of Georgia all kinds of clays are to be found, so that there is no reason why all sorts of clay products should not be manufactured

[1] This has already appeared in Science, 39, 139–140 (1914).

there. Three kinds are of especial importance: the bauxite deposits, fuller's earth, and highly aluminous clays suitable for high refractories; all are of better quality than is commonly found elsewhere, and only require proper technical investigation and control to insure their successful commercial utilization.

Permeability Measurements as an Aid in Proximate Organic Analysis: A. M. MUCKENFUSS.

A general discussion of a method of measuring the relative permeability of films (*e. g.*, of paint or oil) to water vapor, and of the usefulness of such results as an aid in characterizing the film or membrane. The apparatus and method have been described previously.[1] As an example of the results obtainable, curves illustrating the effect of the presence of menhaden, tung or corn oil in films of linseed oil were shown.

Manufacture of Carbon Dioxide and Its Incorporation into Water: W. P. HEATH.

For the production of carbon dioxide on a commercial scale five methods are employed; most usually it is done either by combustion of coke in a special furnace, or by the action of acid on marble or dolomitic limestone. Some anomalous effects have been observed in the behavior of aerated waters as ordinarily made—for instance, that the pressure inside a freshly charged bottle may increase considerably; these effects are attributed to admixture of air with the carbon dioxide.

Walnut Stain in the Killing of Fish: G. P. SHINGLER.

Green walnuts or oak bark thrown into water will kill fish very quickly. Investigation of this question showed that in either case both narcotin and tannin are present in the solution and indicated that the latter is the active poisonous agent.

Sanitary Water Analysis in Relation to Public Health: RAY C. WERNER.

A plea for the importance of thorough control of water supplies, for the need of education in regard to this matter, and for effective inspection of filtration plants, together with regular tests—both chemical and bacteriological—of the water as delivered to the consumer.

Cotton Seed Meal as a Possible Food for Man: C. A. WELLS.

A general discussion of the possible utilization of cotton seed meal as a food for man, of its digestibility and toxicity, and of its food value, especially with regard to its cheapness as a source of protein.

Studies of the Chemical Composition of Cotton Seed: C. L. HARE.

A record of work at the Alabama Experiment Station which was undertaken in order to ascertain whether it would be possible by breeding cotton to improve the seed in the direction of a larger oil content and higher protein content, though of course without prejudice to the amount and quality of the fiber; but up to the present little definite progress has been made. Apparently there is no relation between the amount of lint and that of oil or protein; but the amount of oil seems to bear some relation to the weight of the seeds, to the percentage of protein, and, possibly, to the amount of inorganic constituents.

Occurrence and Composition of Some Alabama Phosphates: B. B. ROSS.

Large quantities of phosphate-bearing strata are found in Alabama, apparently closely associated with a thick bed of rotten limestone and with green sands; their formation is ascribed to a leaching of this phosphatic limestone. This view is confirmed by analyses of boulders, which showed that the weathered layers contain considerably less phosphate than the unweathered portion. Much of this phosphate deposit could not be worked economically at the present time, but it may be capable of later development when other fields become partly exhausted. The green sands contain both potash and phosphate, and many possess local value as a fertilizer.

Rubber Substitute from the Holly: CHARLES P. FOX.

According to a recent French invention a rubber substitute may be made from the holly. Similar experiments with American holly showed that the amount of extract is too small to be remunerative; further, that addition of this extract to reclaimed rubber delays vulcanization, increases the elongation and permanent set, but does not increase its tensile strength.

Mexican Petroleums: MORRIS O. GOTTLIEB.

Chemistry in Relation to the Development of the Fertilizer Industry: J. S. BROGDON.

An Incompatibility in Fertilizer Mining: T. E. KEITT.

When basic slag is mixed with muriate of potash or kainit a large proportion of the potash becomes insoluble in water. The insoluble compound thus formed is very slightly soluble in neutral am-

[1] *J. Ind. Eng. Chem.*, July, 1912.

monium citrate of sp. gr. 1.09, and only slightly soluble in citric acid, but is readily soluble in hydrochloric acid of sp. gr. 1.115.

Two Partially Compensating Sources of Error in the Official Method of Determining Potash: T. E. KEITT.

In the official method there are two sources of error, one the diminished volume due to precipitation of the iron, alumina and tri-calcium phosphate when ammonia and ammonium oxalate are added to the solution after boiling; the second due to occlusion of potash by the above precipitate.

An Odd Result in the Chemical Analysis of a Potable Water: F. P. DUNNINGTON.

Analysis of the water from a newly bored well showed astonishingly high amounts of nitrates, nitrites and chlorides, even after the well had been pumped dry twice. A full explanation lies in the circumstance that the party boring the well wound up by exploding a charge of dynamite "to open up crevices for water" and then to ensure a good job, put some salt in the well. In cleaning out wells some people complete the work by putting salt or lime into the well—an ill-advised custom, frequently encountered in certain regions.

In addition to the above papers there were two informal talks: one by Dr. C. L. Parsons on the radium situation and the capabilities of radium in the cure of cancer, the second by Dr. R. K. Duncan, who described the general organization of the scheme of fellowships in industrial research and recounted a number of the problems upon which the men working under this scheme are engaged; both of these talks were very interesting, and impressed those who heard them.

JOHN JOHNSTON,
Secretary of Section C

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

SECTION F—ZOOLOGY

SECTION F—Zoology—of the American Association for the Advancement of Science held its convocation week meeting in the histological building of the Atlanta Medical College, Atlanta, Ga., December 29 and 30, 1913.

Professor Frank R. Lillie, of the University of Chicago, was elected vice-president and chairman of the section for the ensuing year. C. C. Nutting, Iowa University, was chosen member of the General Committee of the association; Herbert Osborn, Ohio State University, was elected a member of the sectional committee (for 5 years), and E. W. Gudger, Normal College of North Carolina, was made a member of the council of the association.

The following papers were presented at the meeting, either in full or by title:

The Behavior of Leeches with Especial Reference to its Modifiability: WILSON GEE.

The first section of the work reviewed in this paper deals with the reactions of leeches to various classes of stimuli, such as light, chemicals, contact, currents, etc. The second section is an attempt to present, so far as possible, a causal explanation of the modified behavior described in the nephelid leech, *Dina microstoma* Moore. The different responses to the same stimulus were shown in their essential features to be in accord with our knowledge of reflex-arc structure and what might be expected of its conductivity in the various stages of excitement of the leech. Acclimatization to slight stimuli, such as shadows and shocks, was explained on the basis of the dulled sensibility of the receptors and slight changes in the nerve centers involved. It was shown that the phenomenon of fatigue in the leech possesses the same fundamental characteristics as fatigue in skeletal muscle. An important factor in explaining the behavior of the leech at a given moment was shown to be the consideration of the concurrent stimuli operative at that moment. Perhaps intermediate metabolic products are the cause of much of the difference in responsiveness between normal and well-fed leeches. The increased irritability of starved leeches is probably due to much the same cause.

Additional Data on Some of Eisen's Species of Lumbricidæ: FRANK SMITH.

Eisen in 1874 published a list of *Lumbricidæ* from Niagara and from Mt. Lebanon, New England, in which he described four new species. One of them is the widely distributed and well-known *Helodrilus parvus*. The other three species have not been reported since. Eisen gave only brief descriptions of their external characters and their real status has been uncertain. The United States National Museum has specimens of each of these three species which were given by Eisen many years ago, and are accompanied by labels showing that they were part of the original collections on which the descriptions were based. They are in the collections of *Oligochæta* which have been turned over to the writer for study. Sections have